Space Weather Forecast

Issued on Sunday 1 December 2024 at 01:02 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate flares. Slight Chance of peak G1/Minor Geomagnetic Storm conditions Day 2 or 3 (02 or 03 Dec).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low during the past 24 hours, with a peak high-level Common-class flare observed at 30/0906 UTC, originating from the largest sunspot on the disc. This sunspot is one of two moderately large regions located in the southwest quadrant. Despite their size and moderate complexity these regions have been largely inactive during the period. The remaining regions are smaller and more magnetically simple, with no significant growth or decay observed.

No Earth-directed coronal mass ejections (CMEs) were observed during the past 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds has been Background to Slightly Elevated, ranging between 340-440km/s. Total magnetic field strength was generally Moderate. The north-south component Bz, initially varied between negative (southward) and positive (northward) orientations, ranging between -8/+8nT, although has generally been steady and largely positive (northward) since 30/0400 UTC. Geomagnetic activity was Active (Kp4) between 30/0000-0300UTC, after which activity has been Quiet (Kp0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected with a chance of isolated Moderate-class flares. There is a very slight chance of Strong flares.

Solar Wind / Geomagnetic Activity: A slow CME seen leaving the Sun on 27 Nov is likely to give Earth a glancing impact on Day 2 (02 Dec) or early Day 3 (03 Dec), but with limited enhancements to solar wind parameters expected. This may combine with a weak high-speed stream from a small, equatorial coronal hole on the same days, but solar winds are expected to remain at, or close to Background levels throughout.

Overall, mainly Quiet Geomagnetic activity is expected with a chance of Unsettled intervals through the forecast period. There is a chance of Active (Kp4) conditions on Day 2 and 3 (02 and 03

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Dec) with a very slight chance of G1/Minor Geomagnetic Storm intervals, should weak high-speed stream and CME influences sufficiently combine.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background levels with only a slight chance of solar radiation storms occurring.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	1	20	10	1
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	No	45	45	45	40
Very Active	**R3-R5 (X Class)**	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	10	15	15	15
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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